

US008687299B1

# (12) United States Patent Sanford et al.

## (54) BAYONET ATTACHMENT MECHANISMS

(75) Inventors: **Emery A. Sanford**, San Francisco, CA (US); **Dominic C. Toselli**, Calgary (CA)

(73) Assignee: Apple Inc., Cupertino, CA (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35

U.S.C. 154(b) by 15 days.

(21) Appl. No.: 13/607,611

(22) Filed: Sep. 7, 2012

(51) Int. Cl. G02B 7/02 (2006.01)

(52) U.S. Cl.

USPC ...... 359/828; 359/827; 362/365; 92/161

(58) Field of Classification Search

USPC ............ 359/611, 819, 823, 827, 828; 362/148, 362/365; 368/88, 281, 294; 285/312, 315, 285/316, 361; 251/149.1, 238, 325; 92/161

See application file for complete search history.

### (56) References Cited

#### U.S. PATENT DOCUMENTS

2,315,981 A 4/1943 Olson 4,017,878 A 4/1977 Hagiwara 4,302,077 A 11/1981 Sato et al.

# (10) Patent No.: US 8,687,299 B1 (45) Date of Patent: Apr. 1, 2014

4,766,453	Α	8/1988	Shiokama et al.
5,384,614	A	1/1995	Hasuda
5,644,441	A	7/1997	Hirasaki et al.
6,226,068	B1*	5/2001	Arcykiewicz et al 439/314
6,371,630	B1 *	4/2002	Unger 362/365
7,072,247	B2 *	7/2006	Hiranuma et al 368/88
7,082,870	B2 *	8/2006	Verbo et al 92/161
2013/0015656	A1*	1/2013	Ehrke et al 285/316

<sup>\*</sup> cited by examiner

Primary Examiner — Loha Ben

(74) Attorney, Agent, or Firm — Womble Carlyle Sandridge & Rice LLP

#### (57) ABSTRACT

An attachment mechanism includes a compliance member positioned between a body and bayonets. The bayonets collectively define an aperture therebetween. Alignment members prevent rotation of the bayonets relative to the body while allowing the bayonets to move radially outwardly against the compliance member. When a second attachment mechanism is received in the aperture of the first attachment mechanism, relative rotation therebetween may interlock corresponding bayonets thereof. The attachment mechanisms may release from one another in a drop event or other incidence of force applied thereto by allowing a bayonet to radially move outwardly out of contact with a corresponding bayonet of the second attachment mechanism. Related methods are also provided.

### 21 Claims, 17 Drawing Sheets

